

Food Safety for the 21st Century

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THROUGHOUT HISTORY, HUMAN HEALTH HAS DEPENDS on food supply. Recognition that food can pose a major threat to human health is also centuries old. Federal regulation to reduce food contamination in the United States began in the early 20th century, with the adoption of the Pure Food and Drug Act and the Meat Inspection Act of 1906 that regulated food purity and required content disclosure. Since then, additional regulatory measures and industrial improvements have further reduced contamination, although food-borne pathogens still cause the deaths of 5000 individuals a year in the United States.¹ But the most rapidly growing food-related threat to health today is not microbes, but overconsumption of calories, sugar, salt, and unhealthy fat.

In the United States, nearly a third of adults are obese, a proportion that has doubled in 20 years.² Unhealthy diet and physical inactivity are second only to tobacco as underlying causes of death.³ Overweight and obesity currently account for more than 1 in 6 cancer deaths in the United States.⁴ Globally, the 10 leading underlying causes of disability-adjusted life-years lost include high blood pressure (which is in large part diet-related), overweight, high cholesterol, and low intake of fruits and vegetables.⁵

Echoing the public outcry about food sanitation a century ago, there is increasing public distrust of food and the food industry, evidenced by books and films such as *Fast Food Nation* and *Supersize Me*. However, governments have been slow to use effective public policy to protect citizens from diet-related chronic diseases. Instead, efforts to promote healthy eating have generally been limited to guidelines and education, which are relatively weak interventions. To have a substantial effect on diet-related health problems, as did public health measures in response to microbial threats, stronger actions are needed.

Improve the Nutritional Profile of Foods

Food safety can be improved by asking or requiring food manufacturers or preparers to reduce harmful ingredients. An example of a harmful ingredient in need of regulation is artificial trans fat. Cost, long shelf-life, and, ironically, perceived health benefits of artificial trans fat compared with

butter and other saturated fats once made artificial trans fat popular. But gram for gram, trans fat poses more cardiovascular disease risk than saturated fat because it both increases low-density lipoprotein cholesterol and decreases high-density lipoprotein cholesterol.⁶ Mozaffarian et al⁷ estimated reductions of between 6% and 22% in the incidence of nonfatal myocardial infarction or death from coronary heart disease if 2% of caloric intake from trans fat changes to heart-healthier alternatives. The US Food and Drug Administration (FDA) required labeling the trans fat content of foods on Nutrition Facts panels in 2006, prompting many manufacturers to remove trans fat from their packaged products. In contrast, labeling is not required in restaurants and thus consumers cannot choose to avoid trans fats while dining out.

In 2005, New York City requested that the restaurant industry eliminate artificial trans fat voluntarily. Despite educational efforts to suppliers, restaurant operators, and consumers, use did not decrease. Therefore, in 2006, the New York City Board of Health, building on its traditional role of restaurant regulation, passed a measure to restrict artificial trans fat in restaurant food. Elimination of trans fat from fry oils and spreads became effective July 1, 2007. By December 2007, 97% of inspected restaurants were in compliance. A second phase of the restriction, which became effective July 1, 2008, extends to all other foods, including baked goods and fried dough.

Other US cities have adopted similar policies, and trans fat restrictions are being considered by several states. Helping to make this feasible, the oil industry has introduced additional commercial fats for bakers that eliminate artificial trans fat and also significantly reduce saturated fats. The FDA should consider the next step—a national phase-out of artificial trans fat from the food supply.

It is more challenging—but even more important—to reduce consumption of sodium and sugar. Americans consume nearly twice the maximum recommended daily intake of 2300 mg of sodium. One estimate suggests that a reduction of 1300 mg/d of sodium intake would save 150 000 lives per year.⁸ Reducing the sodium content of

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foods would save many more lives than treatment of all persons who have hypertension with blood pressure-lowering drugs.⁹ Processed and restaurant foods account for 77% of salt consumption, so it is nearly impossible for consumers to greatly reduce their own salt intake. Recognition that salt reduction in food would be desirable is not new in the United States. In 1981, then FDA Commissioner Arthur Hayes wrote of his intention to reduce sodium in processed food, but little substantive action has occurred beyond labeling, suggesting that a successful effort requires substantial political will.

Sodium intake in the United States has increased 69% in women and 48% in men from the early 1970s to 2000.¹⁰ In contrast, in the late 1970s, Finland launched a comprehensive salt-reduction campaign, resulting in a reduction of one-third in total sodium intake. Since 2004, the United Kingdom has vigorously pursued voluntary reductions of salt in processed foods. The UK Association of Cereal Manufacturers has reported that salt content in cereals decreased by more than 30%, and population sodium intake, measured by urinary sodium, has decreased.¹¹ In 2006, the American Medical Association called for a 50% sodium decrease over the next 10 years in processed foods, fast-food products, and other restaurant-served meals.¹²

Added sugar in prepared foods should likewise be reduced. The World Health Organization recommends that added sugar constitute less than 10% of calories. Children in the United States now consume twice that proportion, with sugared drinks being the largest single contributor.¹² Reversing the increasing intake of sugar is central to limiting calories, but governments have not done enough to address this threat.

Make Nutrition Information More Available

Since 1994, the United States has required standardized Nutrition Facts panels on virtually all packaged foods. The labels present the number of calories and amount of key nutrients per serving, including percentage of daily recommended allowance, and consumers report using this information when selecting food.

In Europe, although labeling remains largely voluntary and less widely adopted, simpler formats are used that may be more effective. The UK government recommends a front-of-pack red, amber, and green “traffic light” icon for fat, saturated fat, sugar, and salt. Green signals healthy content and red indicates potentially unhealthy content. Direct warning labels for foods high in specific ingredients such as salt may be more effective and could also be required.¹³

In the United States, one-third of calories come from foods prepared away from the home, so it is important for nutrition information to be available at restaurants also.¹⁴ Currently, many chain restaurants either fail to provide nutritional information or do so inconveniently on Web sites, tray liners, or food wrappers, where it is observed by

less than 5% of customers.¹⁵ To provide consumers with more information at the time of purchase, New York City passed regulations—currently in effect but being challenged in court by the restaurant industry—to require certain restaurants to post calorie amounts prominently on menus and menu boards. Similar regulations were passed in Seattle/King County, Washington, and San Francisco, California.

Limit the Opportunity to Sell Unhealthy Foods

In contrast with most of human history, currently most individuals, at least in developed nations, do not need to search widely for food. But when a pharmacy looks like a mini-mart, a bookstore offers 800-calorie coffee confections, and a short walk offers multiple opportunities to purchase high-calorie snacks and soda, the ubiquity of food becomes treacherous. For other consumer products that have adverse health effects, such as alcohol and tobacco, society puts reasonable limits on where and how they can be sold; similar limits could be considered for foods that are closely linked to obesity. For example, Los Angeles is considering a moratorium on new fast-food outlets in South Los Angeles, a low-income area where obesity prevalence is high. Amending zoning or permit requirements could potentially limit the number or density of locations selling unhealthy foods in restaurants, vending machines, and other outlets.

Other policies exist that could help protect the public from unhealthy food. Governments can restrict marketing and promotion, subsidize healthy food production and distribution, or adjust taxes to modify consumption patterns. Fruits and vegetables, the healthiest, most nutrient-dense foods, are currently among the most expensive, while many unhealthy, energy-dense foods are inexpensive—a key disincentive to healthy eating. Making unhealthy food more costly and healthy food less expensive by changing subsidies, taxes, or other approaches may be the single most effective way to help reverse the obesity epidemic.

Governments are also large purchasers of food, providing meals and snacks to children, military personnel, the elderly, individuals held in jails, and others. Raising the standards for food purchased and served by government could have broad implications. For instance, in 2006, New York City switched from whole milk to 1% fat milk for all public school students, saving 800 000 students on average approximately 38 calories per day, a change that can add up to nearly 2 lb per year per student. Ceasing to promote sugared beverages or other calorie-dense snack foods in schools, health care facilities, government buildings, and other public settings could also benefit persons in those settings and help establish standards for private settings. Through procurement, permitting, and concessions, government can establish norms that food manufacturers must meet. This can make healthier choices increasingly available for other purchasers.

Conclusions

The modern food supply is tainted—it is too salty, too fatty, too sugary, and too rich in calories, and there is simply too much of such food easily available. Recent books and films depict an industry that has been allowed to pursue increased consumption unchecked, without regard for health impact. The resulting unhealthy food supply has fueled epidemics of obesity and diabetes and contributes to heart disease and stroke.

To make the food supply healthier, government should reduce—either by coordinating voluntary action or by regulating—ingredients known to be harmful in excess, such as artificial trans fat, salt, and added sugar, and consider a wide range of other interventions to reduce the consumption of unhealthy foods and increase access to healthy foods. This challenge extends not only to Congress and the FDA, but also to state and local legislatures and agencies to act within their respective scopes of authority. Simply waiting for the industry to self-regulate while telling the public to “just say no” to the ubiquitous supply of unhealthy food is clearly a failed strategy.

Food safety for the 21st century should be reframed. Just as society protected the public from microbes, adulterants, and additives in food during the 20th century, public health systems must reduce the contribution of food to the epidemics of obesity and chronic disease that characterize the current era. It is time for more action.

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